

**TRIP REPORT
FOR THE
PLEASANT HILLS TRAILER PARK SITE
TILDEN TOWNSHIP, BERKS COUNTY, PENNSYLVANIA**

Prepared for

U.S. Environmental Protection Agency
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EPA Contract No. 68-S3-00-02

Technical Direction Document No. SE3-02-11-002
Document Tracking No. 1826

February 5, 2003

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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. 68-S3-00-02, Technical Direction Document (TDD) No. SE3-02-11-002, U.S.

Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech) to conduct a removal assessment at the Pleasant Hills Trailer Park (Pleasant Hills) site in Tilden Township, Berks County, Pennsylvania. Tetra Tech conducted x-ray fluorescence (XRF) soil analysis and collected six surface soil and five groundwater samples, including quality assurance and quality control (QA/QC) samples, from selected areas throughout the site. EPA tasked Tetra Tech to perform the removal assessment due to allegations of the presence of lead battery waste throughout the Pleasant Hills site.

This trip report provides site background information in Section 2.0; describes site activities, deviations from the sampling and analysis plan (SAP) (Tetra Tech 2002), and investigation-derived waste disposal in Sections 3.0, 4.0, and 5.0, respectively; evaluates sample analytical results in Section 6.0; and summarizes conclusions and recommendations in Section 7.0. All references cited in this report are listed after the text. Copies of Tetra Tech's field logbook notes and photographic documentation log are included in Appendices A and B, respectively. Copies of the chain-of-custody records and analytical packages are included in Attachments A and B, respectively.

2.0 BACKGROUND

This section describes the site location, presents a description of the site, and summarizes previous investigation activities.

2.1 SITE LOCATION

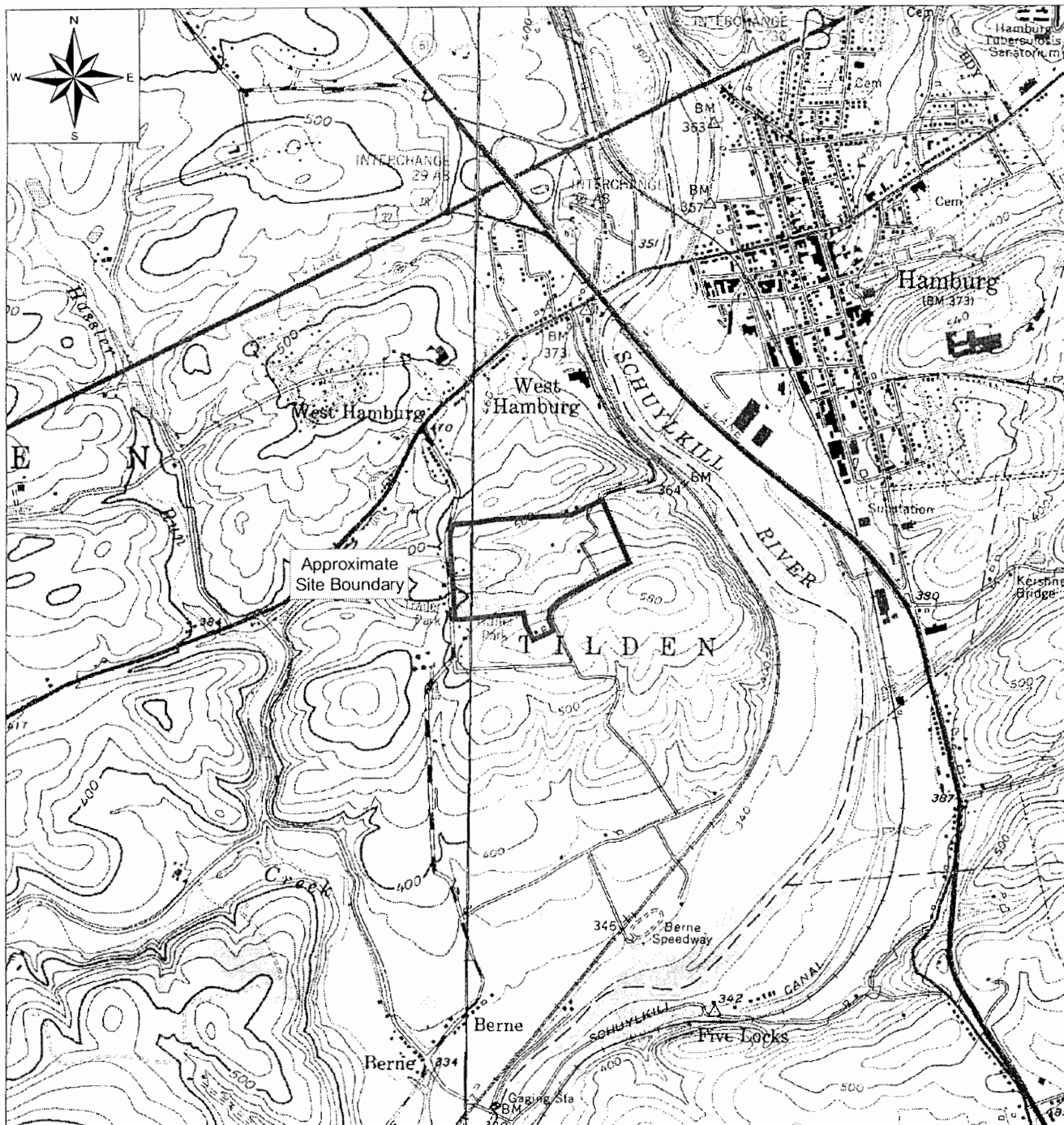
The Pleasant Hills site is located between Hill Drive and Berne Road in Tilden Township, Berks County, Pennsylvania, as shown in Figure 1. The geographic coordinates of the site are 40.5421° north latitude and 76.0005° west longitude. The site is situated on a hilltop that is surrounded predominantly by farmland and private residences. The Schuylkill River is located approximately 1,000 feet to the east of the site. The site is bordered by residential properties and farmland to the south and west, by Berne Road to the West, and by woodlots and upland meadows to the north.

2.2 SITE DESCRIPTION

The Pleasant Hills site is a trailer park that consists of 300 to 325 residential units situated on approximately 65 acres, known as the Village At Pleasant Hills. According to the Village At Pleasant Hills manager Louis Williams, the current number of residents at the site is estimated at 850 to 1,000. The site demographics, including number of children, are currently unknown. A portion of the site to the south is being developed and is currently not inhabited. There are two wells located in pump houses on site that provide water to the residents, and one centralized sewage treatment plant (STP), as shown in Figure 2. Multiple roadways service the site, specifically South Street, along which lead battery waste (casing fragments) has been observed.

2.3 PREVIOUS SITE ACTIVITIES AND INVESTIGATIONS

In late 2001, EPA received several anonymous phone calls alleging that casing fragments had been used as backfill at the site and that the groundwater supply may be contaminated. On November 14, 2002, EPA requested Tetra Tech's assistance with a removal assessment at the Pleasant Hills site. EPA On-Scene Coordinator (OSC) Michael Zickler spoke with Tetra Tech project manager Brad White and provided relevant background information about the site. OSC Zickler requested that Tetra Tech personnel meet him on site on Friday morning,

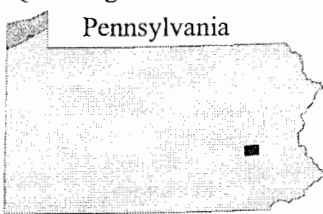


Source: Modified from USGS 7.5-Minute Series Topographic Quadrangle, Auburn, Pennsylvania, 1945, Photorevised 1979

Hamburg, Pennsylvania, 1956, Photorevised 1969, 1977, Minor Revision 1994

0 0.25 0.5
Miles

Quadrangle Location = ■



Pleasant Hills Trailer Park Site
Tilden Township, Berks County, Pennsylvania

Figure 1
Site Location Map

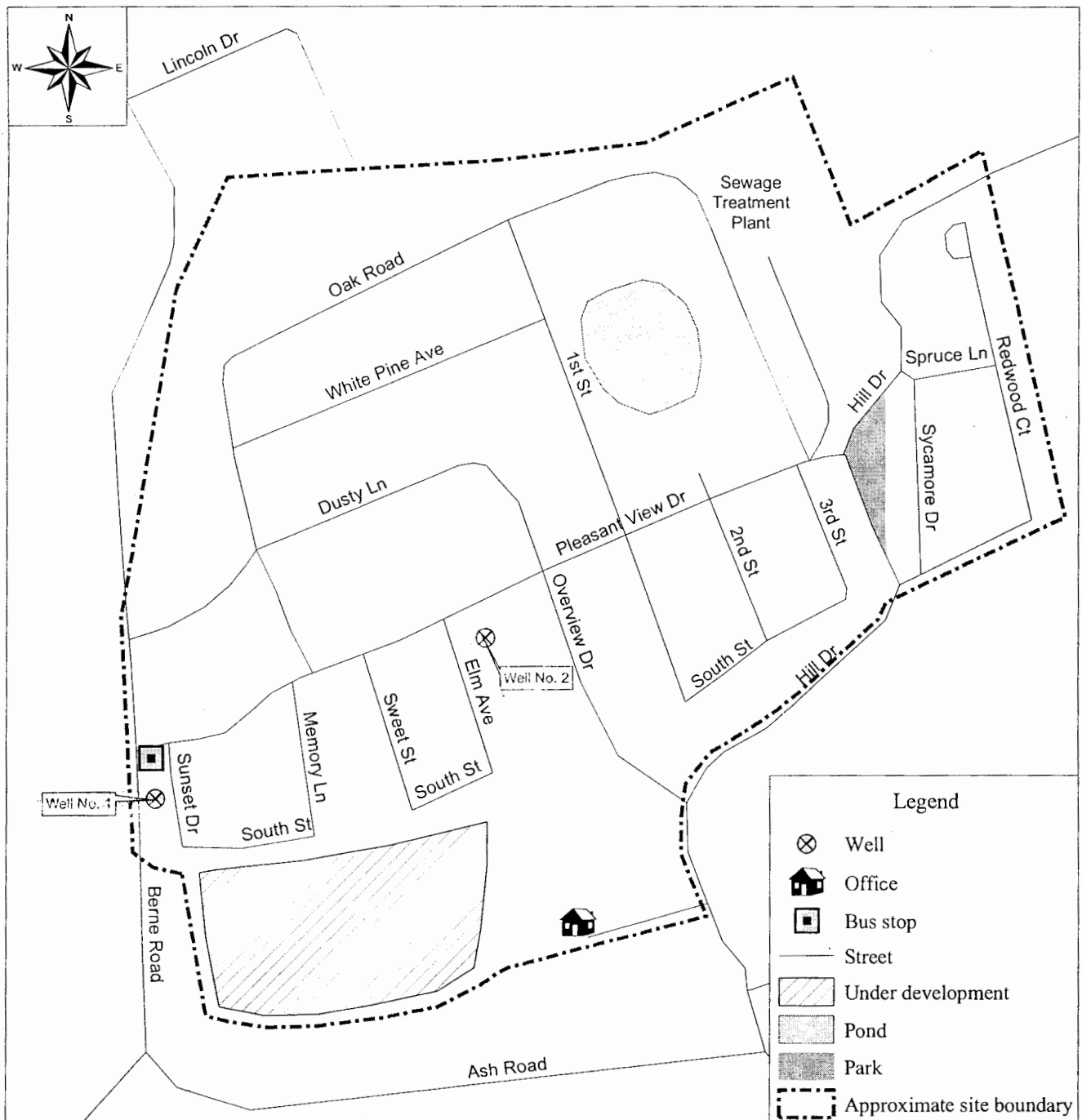
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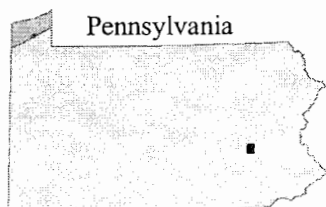
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Source: Modified from Microsoft Streets and Trips, 2001

Not to Scale

Approximate Site Location = ■



Pleasant Hills Trailer Park Site
Tilden Township, Berks County, Pennsylvania

Figure 2
Site Layout Map

TDD No. SE3-02-11-002
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November 22, 2002, to conduct a site reconnaissance and initiate a removal assessment.

On November 22, 2002, EPA and Tetra Tech mobilized to site to conduct a site reconnaissance. Lehigh Engineering Associates, Inc. (Lehigh Engineering) representative Allen Ringer, the environmental consultant for the Village of Pleasant Hills, was also on site. The weather was light rain with a high temperature of 49°F and a low temperature of 40°F (The Weather Underground, Inc. 2002). The goal of the reconnaissance was to look for evidence of casing fragments on the ground surface and to identify potential soil and groundwater sampling locations.

During the site reconnaissance, EPA and Tetra Tech observed numerous casing fragments along South Street, which, according to Lehigh Engineering, is one of the original roads servicing the Pleasant Hills site, dating back to the 1960s. A small quantity of casing fragments was also observed at an empty lot on White Pine Avenue. EPA and Tetra Tech identified multiple locations to collect soil and sediment samples and also the two wells to be used for collection of groundwater samples. EPA requested Tetra Tech return to site at a later date to collect the samples.

3.0 SITE ACTIVITIES

On December 3, 2002, EPA and Tetra Tech returned to the Pleasant Hills site to perform an in-situ x-ray fluorescence (XRF) screening analysis and collect soil and groundwater samples. Lehigh Engineering was also on site to oversee the sampling event, and Village of Pleasant Hills water treatment plant operator Gerry Bonenfant was on site to provide well house access. This section describes the site conditions, sampling activities, and sample documentation and handling at the Pleasant Hills site.

3.1 SITE CONDITIONS

Weather conditions during the sampling event were mostly sunny and cold, with a high of 33 °F and a low of 16 °F (The Weather Underground Inc. 2002). Due to the below freezing temperatures throughout the previous week, soil conditions inhibited the collection of subsurface soil samples, as specified in the SAP (Tetra Tech 2002).

3.2 SAMPLE COLLECTION

Tetra Tech performed in situ XRF screening analysis at targeted as well as random locations throughout the Pleasant Hills site. A total of six soil samples and five groundwater samples, including one duplicate sample for each matrix and a field blank water sample, were collected at the site. Table 1 provides a summary of the samples collected. Sampling activities were recorded in a field logbook and photographically documented; copies of Tetra Tech's field logbook notes and photographic documentation log are provided in Appendix A and B, respectively.

3.2.1 In Situ XRF Screening

In an effort to identify soil sampling locations, Tetra Tech conducted a preliminary in situ screening analysis for lead at various locations throughout the Pleasant Hills site, as shown in Figure 3. The screening analysis was performed using a Niton XL-700 multi-element portable XRF instrument. The data obtained from the XRF screening was used only as a qualitative tool to help identify soil sampling locations. To perform the screening analysis, Tetra Tech removed a small area of grass at each location where necessary, then placed the XRF instrument directly on the soil for a period of 60 seconds. The location and lead reading was then recorded in the field logbook, along with the sample-specific margin of error. Figure 3 shows the XRF screening locations. Table 2 provides a summary of the in situ XRF screening event.

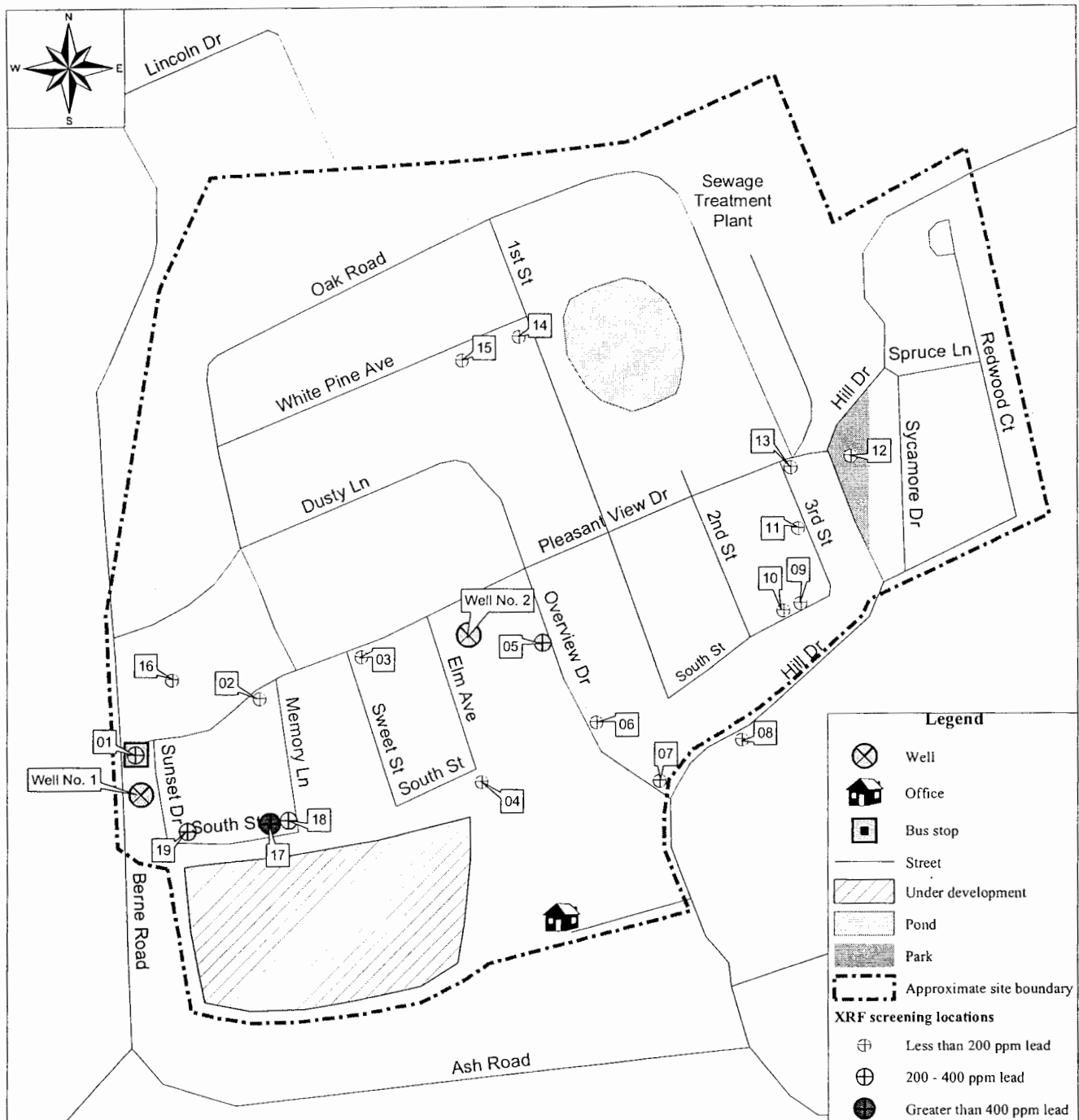
**TABLE 1
SAMPLE SUMMARY**

| Sample ID | Matrix | Date Collected | Time Collected | QA/QC Designation | Analytical Parameter | Analytical Method | Container Type and Volume | Preservative |
|---------------|--------|----------------|----------------|----------------------------|----------------------|-------------------|---|--------------------------------------|
| PH-SS-1203-01 | SS | 12/03/02 | 1215 | -- | TAL metals | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-SS-1203-02 | SS | 12/03/02 | 1220 | -- | Total lead | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-SS-1203-03 | SS | 12/03/02 | 1230 | -- | Total lead | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-SS-1203-04 | SS | 12/03/02 | 1240 | -- | Total lead | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-SS-1203-05 | SS | 12/03/02 | 1240 | Duplicate of PH-SS-1203-04 | Total lead | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-SS-1203-06 | SS | 12/03/02 | 1530 | -- | Total lead | CLP SW846 ILM05.2 | One 8-ounce CWM glass w/Teflon®-lined lid | Ice, cool to 4 °C |
| PH-GW-1203-01 | GW | 12/03/02 | 1100 | -- | Total lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| | | | | | Dissolved lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| PH-GW-1203-02 | GW | 12/03/02 | 1030 | -- | TAL metals | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| | | | | | Dissolved lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| PH-GW-1203-03 | GW | 12/03/02 | 1045 | -- | Total lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| PH-GW-1203-04 | GW | 12/03/02 | 1100 | Duplicate of PH-GW-1203-01 | Total lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| | | | | | Dissolved lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| PH-FB-1203 | GW | 12/03/02 | 1630 | Field blank | TAL metals | CLP SW846 ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |
| | | | | | Dissolved lead | CLP SOW ILM05.2 | One 1-L poly bottle | HNO ₃ ; Ice, cool to 4 °C |

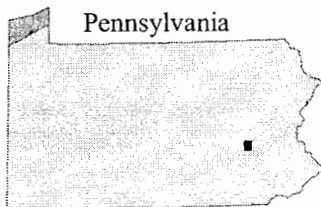
TABLE 1 (Continued)
SAMPLE SUMMARY

Notes:

| | | |
|------------------|---|-----------------------------------|
| -- | = | Not designated |
| CLP | = | Contract Laboratory Program |
| CWM | = | Clear, wide-mouth |
| HNO ₃ | = | Nitric acid |
| L | = | Liter |
| Poly | = | Polyethylene |
| QA/QC | = | Quality Assurance/Quality Control |
| SOW | = | Statement of Work |
| TAL | = | Target Analyte List |



Approximate Site Location = ■



Pleasant Hills Trailer Park Site
Tilden Township, Berks County, Pennsylvania

Figure 3
In Situ XRF Screening Location Map

TDD No. SE3-02-11-002
EPA Contract No. 68-S3-00-02

Tetra Tech EM Inc.

TABLE 2
SUMMARY OF IN SITU XRF SCREENING RESULTS

| Screening No. | Location | Date | Lead Result (ppm) | Instr. Err. (Pb) |
|---------------|---|----------|-------------------|------------------|
| 01 | Bus stop | 12/03/02 | 289 | +/- 30 |
| 02 | (b) (6) | 12/03/02 | 80.9 | +/- 18 |
| 03 | (b) (6) | 12/03/02 | 35.3 | +/- 11 |
| 04 | (b) (6) (b) (6) newly excavated | 12/03/02 | 26.9 | +/- 17 |
| 05 | (b) (6) | 12/03/02 | 200 | +/- 23 |
| 06 | (b) (6) | 12/03/02 | 33.3 | +/- 16 |
| 07 | (b) (6) | 12/03/02 | 23.2 | +/- 15 |
| 08 | (b) (6) | 12/03/02 | 78.5 | +/- 23 |
| 09 | (b) (6) | 12/03/02 | <LOD | NA |
| 10 | (b) (6) | 12/03/02 | <LOD | NA |
| 11 | (b) (6) | 12/03/02 | 19.6 | +/- 8.6 |
| 12 | Near basketball court in park | 12/03/02 | <LOD | NA |
| 13 | Mailboxes on 3 rd Street | 12/03/02 | <LOD | NA |
| 14 | (b) (6) | 12/03/02 | 22.7 | +/- 12 |
| 15 | 121 White Pine Avenue | 12/03/02 | 72 | +/- 18 |
| 16 | Northeast corner Berne Road and Pleasant View Drive | 12/03/02 | 47.4 | +/- 16 |
| 17 | South Street | 12/03/02 | 624 | +/- 47 |
| 18 | South Street | 12/03/02 | 294 | +/- 32 |
| 19 | (b) (6) | 12/03/02 | 336 | +/- 33 |

Notes:

Intr. Err. = Instrument error
 <LOD = Less than the instrument level of detection
 NA = Not applicable
 Pb = Lead
 ppm = Part per million
 XRF = X-ray fluorescence

Report

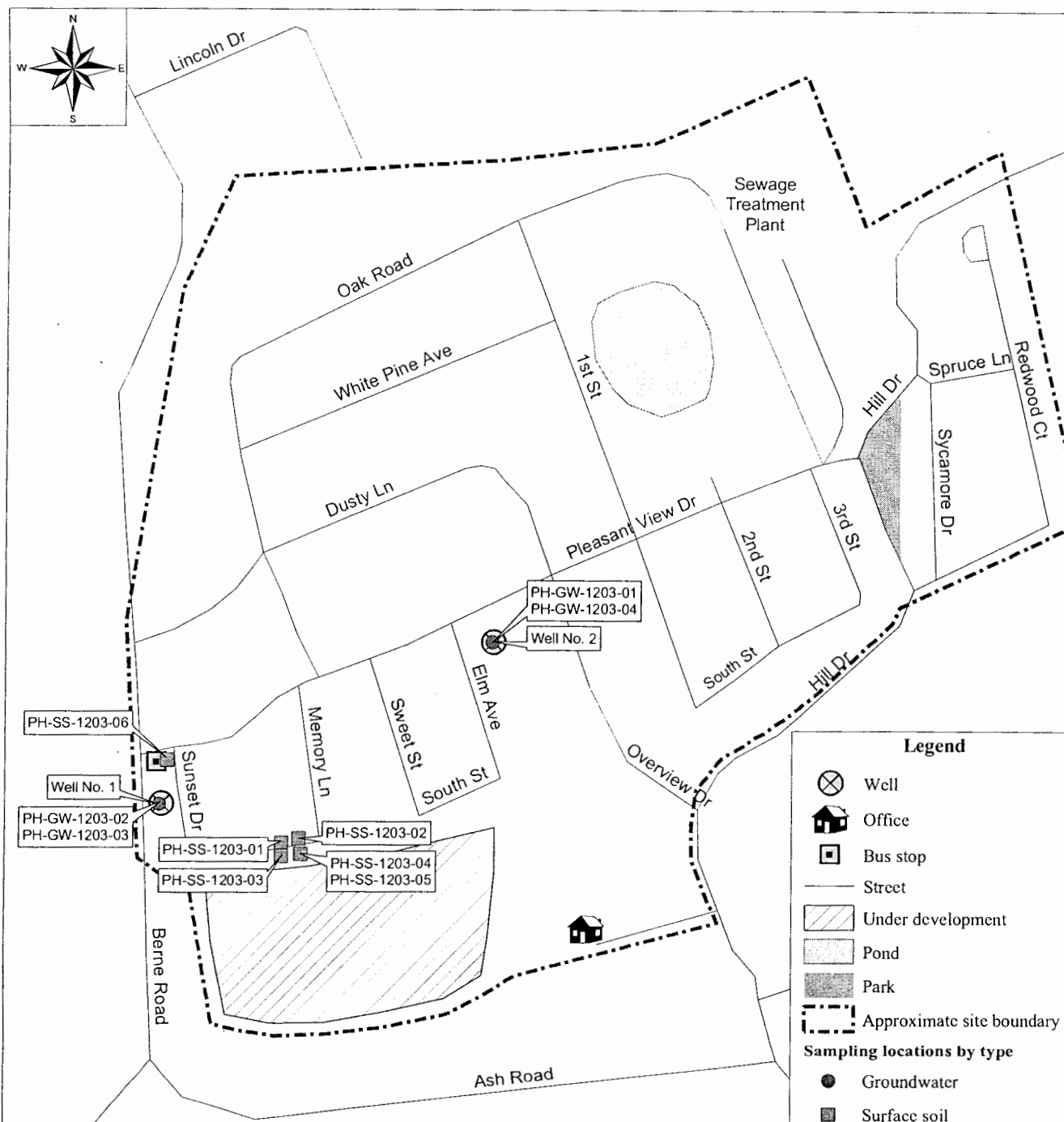
3.2.2 Soil Sampling

Upon completion of the in situ XRF screening, EPA and Tetra Tech reviewed the results to determine soil sampling locations. A total of six soil samples, including one duplicate, were collected from locations where XRF results revealed the presence of elevated lead greater than 200 parts per million (ppm), or where evidence of battery casing fragments was visible in the soil. Figure 4 shows the approximated sampling locations, and Table 2 provides a summary of all samples collected during the sampling event. Soil samples were collected for target analyte list (TAL) metals and total lead analysis.

Tetra Tech used a sod shovel to remove a small area of grass at each soil sampling location to expose the soil beneath it. Soil samples were collected from a depth of 0 to 6 inches below ground surface (bgs). The sod shovel was decontaminated between sampling locations with a solution of Liquinox and water followed by a final rinse with distilled water. Dedicated sampling equipment and personal protective equipment (nitrile gloves only) were used at each sampling location. Dedicated sampling equipment consisted of a plastic scoop and an aluminum baking pan.

Soil samples were placed in an aluminum baking pan, homogenized, and then transferred into 8-ounce, clear glass, wide-mouth sample jars and capped with Teflon-lined lids. The sod that had been removed prior to sampling was replaced and tamped down after the soil samples had been collected.

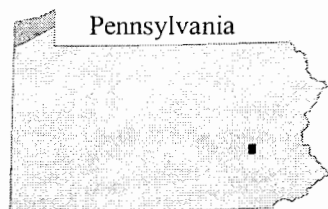
Background soil samples used for the Pleasant Hills site are the same as those currently being used for other Hamburg-area site assessments. The samples are GD-BGRD-1, collected from the Kernsville Dam area; and GD-BGRD-3, collected from the eastern end of Kaercher State Park. Both background soil samples were collected on April 18, 2002 by Tetra Tech personnel.



Source: Modified from Microsoft Streets and Trips, 2001

Not to Scale

Approximate Site Location = ■



Pleasant Hills Trailer Park Site
Tilden Township, Berks County, Pennsylvania

Figure 4
Sampling Location Map

TDD No. SE3-02-11-002
EPA Contract No. 68-S3-00-02



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3.2.3 Groundwater Sampling

Water service to the Village at Pleasant Hills residents is provided by two on-site wells. Well no.1, which is 211 feet deep, is located in the center of the Pleasant Hills site and has a pumping capacity of 50,400 gallons per day (gpd). Well no. 2, located on the west side of the Pleasant Hills site near Berne Road, has a pumping capacity of 57,600 gpd (Pennsylvania Department of Environmental Protection [PADEP] 1997). Specific information regarding well no. 2 was not available. Both wells are enclosed in well houses. The raw groundwater from each well is disinfected with sodium hypochlorate prior to being pumped to a 4,000-gallon storage tank, which retains water from both wells. Water from the storage tank is then gravity-fed to a booster pump found inside the well no.1 well house, where the water is ultimately cycled into the distribution system.

Tetra Tech located the raw water influent line from each of the two wells and purged them for 10 minutes by turning on the well pump. Purge water was allowed to drain into a cement crock inside the well house. After purging, pretreatment water samples were collected directly from a spigot using dedicated sampling equipment and personal protective equipment (nitrile gloves only). Tetra Tech collected pretreatment water sample PH-GW-1203-02 from well no. 1 and pretreatment water samples PH-GW-1203-01 and PH-GW-1203-04 from well no. 2. Post-treatment water sample PH-GW-1203-03 was also collected from the well no. 1 well house to simulate the actual treated water supplied to each of the residents. Sample PH-GW-1203-03 was collected from a port just prior to the booster pump used to cycle the treated water into the distribution system.

Tetra Tech collected a total of five water samples, including a field blank and duplicate sample, for total lead and TAL metals analysis. Figure 4 shows approximate sampling locations, and Table 2 provides a summary of all samples collected during the sampling event. Samples were collected directly into 1-liter plastic bottles. Water samples collected for dissolved lead analysis were filtered through a 0.45-micron filter and transferred into 1-liter plastic bottles. Dedicated

sampling equipment consisted of 1-liter plastic bottles and in-line, 0.45 micron filters (for dissolved lead samples). The water samples were then preserved by adding nitric acid and lowering the pH to 2.0.

3.3 SAMPLE DOCUMENTATION AND HANDLING

A total of five groundwater samples and six soil samples, including one duplicate sample for each matrix and a field blank water sample, were collected at the Pleasant Hills site. All of the samples were placed in coolers containing ice. Sampling activities were recorded in a field logbook and photographically documented. Groundwater samples collected for TAL metals, total lead and dissolved lead analysis were shipped to EPA's regional laboratory in Fort Meade, Maryland, on December 4, 2002. Soil samples collected for TAL metals and total lead analysis were shipped to Chemtech Consulting Group in Edison, New Jersey, on December 4, 2002. Table 2 provides a summary of the samples collected.

4.0 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

Sampling and analyses methodologies were implemented in accordance with the SAP for the Pleasant Hills site (Tetra Tech 2002) with some minor exceptions. Proposed sediment sample PH-SD-1203-01 was not collected because the grate covering the storm sewer catch basin could not be lifted. Subsurface soil samples PH-SB-1203-01, PH-SB-1203-02, and PH-SB-1203-03 were not collected because of frozen soil conditions. Finally, at the OSC's request, the total number of surface soil samples collected was six, as opposed to seven proposed in the SAP (Tetra Tech 2002). The reduction of one sample from the original plan does not affect the completeness or representation goals stated in the SAP.

5.0 INVESTIGATION-DERIVED WASTE DISPOSAL

All solid waste generated on site during the removal assessment was disposed of as non-hazardous municipal waste. Approximately 2 gallons of dilute, soapy solution consisting of Liquinox (a nonphosphate detergent) and water generated during the decontamination of sampling tools was disposed of on site.

6.0 ANALYTICAL RESULTS AND EVALUATION

A total of six soil samples and five groundwater, including QA/QC samples, were collected at the Pleasant Hills site on December 3, 2002. A discussion of the analytical results is provided below. Copies of the analytical data packages received from Fort Meade and Chemtech Consulting Group are provided in Attachment B.

Table 3 provides a summary of the total metals concentrations detected in the soil samples. Sample PH-SS-1203-01 was analyzed for TAL metals, while the remaining five soil samples were analyzed for total lead only. Lead was detected at significant concentrations of 1,010; 639; 1,200; 904; and 602 milligrams per kilogram (mg/kg) from samples PH-SS-1203-01; PH-SS-1203-02; PH-SS-1203-04; PH-SS-1203-05; and PH-SS-1203-06, respectively.

Table 4 provides a summary of total metals concentrations detected in the unfiltered groundwater samples. Three of the samples contained trace amounts of lead, and one sample, PH-GW-1203-04, contained a lead concentration of 21 micrograms per liter ($\mu\text{g/L}$). Trace amounts of calcium, copper, magnesium, sodium, and zinc were detected in sample PH-GW-1203-02.

Table 5 provides a summary of dissolved lead concentrations detected in the filtered groundwater samples.

**TABLE 3
SUMMARY OF SOIL SAMPLES**

| | | | | | | | | | | |
|--------------------------|-------|---------------------|---------------|----|---------------|---|---------------|---|---------------|---|
| FIELD SAMPLE NUMBER | | | PH-SS-1203-01 | | PH-SS-1203-02 | | PH-SS-1203-03 | | PH-SS-1203-04 | |
| LABORATORY SAMPLE NUMBER | | | P5373-01 | | P5424-02 | | P5424-03 | | P5424-04 | |
| DATE COLLECTED | | | 12/03/02 | | 12/03/02 | | 12/03/02 | | 12/03/02 | |
| TIME COLLECTED | | | 1215 | | 1220 | | 1230 | | 1230 | |
| DATE ANALYZED | | | 12/05/02 | | 12/05/02 | | 12/05/02 | | 12/05/02 | |
| UNITS | | | mg/kg | | mg/kg | | mg/kg | | mg/kg | |
| FIELD QA/QC DESIGNATION | | | -- | | -- | | -- | | -- | |
| ANALYTE | CRQL | ERG (mg/kg) | Result | Q | Result | Q | Result | Q | Result | Q |
| Aluminum | 40 | 782,142.86 | 9,880 | | NR | | NR | | NR | |
| Antimony | 12 | 312.86 | 2.3 | B | NR | | NR | | NR | |
| Arsenic | 3 | 42.58 | 4.1 | K | NR | | NR | | NR | |
| Barium | 40 | 54,750.00 | 81.9 | | NR | | NR | | NR | |
| Beryllium | 1 | 1,564.29 | 0.65 | | NR | | NR | | NR | |
| Cadmium | 1 | -- | 1.1 | | NR | | NR | | NR | |
| Calcium | 1,000 | -- | 60,300 | | NR | | NR | | NR | |
| Chromium | 2 | 1,173,214.29 | 16.9 | | NR | | NR | | NR | |
| Cobalt | 10 | 15,642.86 | 9.8 | | NR | | NR | | NR | |
| Copper | 5 | 31,285.71 | 23.2 | | NR | | NR | | NR | |
| Iron | 20 | 234,642.86 | 21,000 | | NR | | NR | | NR | |
| Lead | 2 | 400.00 ^a | 1,010 | | 639 | | 335 | | 1,200 | |
| Magnesium | 1,000 | -- | 13,300 | | NR | | NR | | NR | |
| Manganese | 3 | 15,642.86 | 299 | | NR | | NR | | NR | |
| Mercury | 0.1 | -- | 0.06 | L | NR | | NR | | NR | |
| Nickel | 8 | 15,642.86 | 21.3 | | NR | | NR | | NR | |
| Potassium | 1,000 | -- | 1,480 | J | NR | | NR | | NR | |
| Selenium | 7 | 3,910.71 | 7.7 | | NR | | NR | | NR | |
| Silver | 2 | 3,910.71 | 2.2 | UL | NR | | NR | | NR | |
| Sodium | 1,000 | -- | 77.1 | | NR | | NR | | NR | |
| Thallium | 5 | 54.75 | 5.5 | UL | NR | | NR | | NR | |
| Vanadium | 10 | 5,475.00 | 16.2 | | NR | | NR | | NR | |
| Zinc | 12 | 234,642.86 | 70.8 | | NR | | NR | | NR | |

TABLE 3 (Continued)
SUMMARY OF SOIL SAMPLES

| | | | | | | | | | | |
|--------------------------|-------|--------------|----------------------------|---|---------------|---|-----------|---|-----------|---|
| FIELD SAMPLE NUMBER | | | PH-SS-1203-05 | | PH-SS-1203-06 | | GD-BGRD-1 | | GD-BGRD-3 | |
| LABORATORY SAMPLE NUMBER | | | P5424-05 | | P5424-01 | | 2042447 | | 2042449 | |
| DATE COLLECTED | | | 12/03/02 | | 12/03/02 | | 04/18/02 | | 04/18/02 | |
| TIME COLLECTED | | | 1230 | | 1530 | | 1230 | | 1215 | |
| DATE ANALYZED | | | 12/05/02 | | 12/05/02 | | NA | | NA | |
| UNITS | | | mg/kg | | mg/kg | | mg/kg | | mg/kg | |
| FIELD QA/QC DESIGNATION | | | Duplicate of PH-SS-1203-04 | | -- | | -- | | -- | |
| ANALYTE | CRQL | ERG (mg/kg) | Result | Q | Result | Q | Result | Q | Results | Q |
| Aluminum | 40 | 782,142.86 | NR | | NR | | 12,300 | | 12,700 | |
| Antimony | 12 | 312.86 | NR | | NR | | 0.5 | | 0.4 | |
| Arsenic | 3 | 42.58 | NR | | NR | | 7.1 | | 5.2 | |
| Barium | 40 | 54,750.00 | NR | | NR | | 81.5 | | 122 | |
| Beryllium | 1 | 1,564.29 | NR | | NR | | 1.6 | | 0.8 | |
| Cadmium | 1 | -- | NR | | NR | | 0.6 | | <5 | |
| Calcium | 1,000 | -- | NR | | NR | | 5,090 | | 2,530 | |
| Chromium | 2 | 1,173,214.29 | NR | | NR | | 23 | | 16.4 | |
| Cobalt | 10 | 15,642.86 | NR | | NR | | 12.6 | | 11.1 | |
| Copper | 5 | 31,285.71 | NR | | NR | | 24.5 | | 19 | |
| Iron | 20 | 234,642.86 | NR | | NR | | 27,000 | | 23,900 | |
| Lead | 2 | 400.00 | 904 | | 602 | | 48.3 | | 40 | |
| Magnesium | 1,000 | -- | NR | | NR | | 4,580 | | 2,800 | |
| Manganese | 3 | 15,642.86 | NR | | NR | | 812 | | 804 | |
| Mercury | 0.1 | -- | NR | | NR | | <0.1 | | <0.1 | |
| Nickel | 8 | 15,642.86 | NR | | NR | | 21.1 | | 16.7 | |
| Potassium | 1,000 | -- | NR | | NR | | 847 | | 870 | |
| Selenium | 7 | 3,910.71 | NR | | NR | | 0.9 | | 1 | |
| Silver | 2 | 3,910.71 | NR | | NR | | <2 | | <2 | |
| Sodium | 1,000 | -- | NR | | NR | | <100 | | <100 | |
| Thallium | 5 | 54.75 | NR | | NR | | <2 | | <2 | |
| Vanadium | 10 | 5,475.00 | NR | | NR | | 31.5 | | 19.7 | |
| Zinc | 12 | 234,642.86 | NR | | NR | | 73.9 | | 65.9 | |

Notes:

-- Not designated

^a Removal guideline designated by EPA for lead found in bare soil in children's play areas (EPA 2001)

B Not detected substantially above reported level in lab or field blank

DL Detection limit

ERG EPA Region 3 emergency removal guideline, calculated from 2002 risk-based concentration (RBC) table (EPA 2002a)

J Estimated value

K Reported value may be biased high

L Reported value may be biased low

mg/kg Milligram per kilogram

NA Not available

NR Not requested

Q Qualifier

QA/QC Quality Assurance/Quality Control

U Not Detected

TABLE 4
SUMMARY OF UNFILTERED GROUNDWATER SAMPLES

| FIELD SAMPLE NUMBER | | | PH-GW-1203-01 | | PH-GW-1203-02 | | PH-GW-1203-03 | | PH-GW-1203-04 | | PH-FB-1203 | |
|--------------------------|---------|---------|---------------|---|---------------|---|---------------|---|----------------------------|---|-------------|---|
| LABORATORY SAMPLE NUMBER | | | 02120602 | | 02120606 | | 02120601 | | 02120604 | | 02120608 | |
| DATE COLLECTED | | | 12/03/02 | | 12/03/02 | | 12/03/02 | | 12/03/02 | | 12/03/02 | |
| TIME COLLECTED | | | 1100 | | 1030 | | 1045 | | 1100 | | 1630 | |
| DATE ANALYZED | | | NA | | NA | | NA | | NA | | NA | |
| UNITS | | | µg/L | | µg/L | | µg/L | | µg/L | | µg/L | |
| FIELD QA/QC DESIGNATION | | | -- | | -- | | -- | | Duplicate of PH-GW-1203-01 | | Field blank | |
| ANALYTE | DL | MCL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Aluminum | 200.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Antimony | 2.0 | 6.0 | -- | | ND | | -- | | -- | | ND | |
| Arsenic | 1.0 | 50.0 | -- | | ND | | -- | | -- | | ND | |
| Barium | 200.0 | 2,000.0 | -- | | ND | | -- | | -- | | ND | |
| Beryllium | 5.0 | 4.0 | -- | | ND | | -- | | -- | | ND | |
| Cadmium | 5.0 | 5.0 | -- | | ND | | -- | | -- | | ND | |
| Calcium | 500.0 | NA | -- | | 26,600 | | -- | | -- | | ND | |
| Chromium | 10.0 | 100.0 | -- | | ND | | -- | | -- | | ND | |
| Cobalt | 50.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Copper | 25.0 | 1,300.0 | -- | | 96 | | -- | | -- | | ND | |
| Iron | 100.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Lead | 1.0 | 15.0 | 4 | | 10 | | 9 | | 21 | | ND | |
| Magnesium | 500.0 | NA | -- | | 3,960 | | -- | | -- | | ND | |
| Manganese | 15.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Mercury | 0.20 | 2.0 | -- | | ND | | -- | | -- | | ND | |
| Nickel | 40.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Potassium | 2,000.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Selenium | 1.0 | 50.0 | -- | | ND | | -- | | -- | | ND | |
| Silver | 10.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Sodium | 1,000.0 | NA | -- | | 11,200 | | -- | | -- | | ND | |
| Thallium | 1.0 | 2.0 | -- | | ND | | -- | | -- | | ND | |
| Vanadium | 50.0 | NA | -- | | ND | | -- | | -- | | ND | |
| Zinc | 20.0 | NA | -- | | 26 | B | -- | | -- | | ND | |

Notes:

B Analyte not detected 10 times above level reported in laboratory reagent blank
DL Detection limit
MCL Maximum contaminant level; specified as action level (EPA 2002b)
NA Not available
ND Analyte not detected above detection limit
Q Qualifier
-- Not designated
µg/L Microgram per liter

TABLE 5
SUMMARY OF FILTERED GROUNDWATER SAMPLES

| | | | | | | | | | | |
|-------------------------|-----|------|---------------|---|---------------|---|----------------------------|---|-------------|---|
| FIELD SAMPLE NUMBER | | | PH-GW-1203-01 | | PH-GW-1203-02 | | PH-GW-1203-04 | | PH-FB-1203 | |
| LABORATORY SAMPLE | | | 02120603 | | 02120607 | | 02120605 | | 02120609 | |
| DATE COLLECTED | | | 12/03/02 | | 12/03/02 | | 12/03/02 | | 12/03/02 | |
| TIME COLLECTED | | | 1100 | | 1030 | | 1100 | | 1630 | |
| DATE ANALYZED | | | NA | | NA | | NA | | NA | |
| UNITS | | | µg/L | | µg/L | | µg/L | | µg/L | |
| FIELD QA/QC DESIGNATION | | | -- | | -- | | Duplicate of PH-GW-1203-01 | | Field blank | |
| ANALYTE | DL | MCL | Result | Q | Result | Q | Result | Q | Result | Q |
| Lead | 1.0 | 15.0 | 3 | | ND | | 3 | | ND | |

Notes:

DL Detection limit
MCL Maximum contaminant level; specified as Action Level (EPA 2002b)
ND Analyte not detected above detection limit
Q Qualifier
-- Not designated
µg/L Microgram per liter

Lead was detected at a concentration of 3 µg/L in sample PH-GW-1203-01 and also duplicate sample PH-GW-1203-04.

Upon receipt of sample analytical data from the laboratories, Tetra Tech consolidated the data into summary tables and compared the soil sample results to EPA Region 3 emergency removal guidelines (ERG) for residential soil. The EPA Region 3 risk-based concentration (RBC) table is used to calculate ERG's for residential soil. Soil concentrations were also evaluated against EPA's soil hazard standard of 400 ppm for lead found in bare soil in children's play areas. Groundwater sample results were compared with EPA's maximum contaminant levels (MCL) (EPA 2002a, 2002b, and 2001).

Lead concentrations exceeding EPA's soil hazard standard were detected in samples PH-SS-1203-01, PH-SS-1203-02, PH-SS-1203-04, PH-SS-1203-05, and PH-SS-1203-06. The remaining metals concentrations were compared to the ERGs and no exceedances were observed.

Lead was detected in unfiltered pretreatment water sample PH-GW-1203-04 at a concentration of 21 µg/L, which exceeds the MCL of 15 µg/L. However, this sample is a duplicate of PH-GW-1203-01, which had only trace levels of lead detected. Because of the discrepancy in results, the well should be resampled for confirmation. Lead was not detected in significant concentrations in any of the filtered groundwater samples. The remaining inorganic concentrations detected in the samples were compared to the MCLs; no analytes were detected at concentrations at or above the MCLs.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Elevated lead concentrations up to 1,200 mg/kg were detected in soil samples collected at the Pleasant Hills site. There is visual evidence of casing fragments on the ground surface, most notably along South Street, which is one of the original roadways servicing the Pleasant Hills site. Lead was detected in unfiltered pre- and posttreatment groundwater samples collected at the Pleasant Hills site. One pretreatment groundwater sample had a total lead concentration that exceeds the MCL action level for lead, but there was a discrepancy between the sample and its duplicate. Trace concentrations of dissolved lead were also detected in filtered pretreatment groundwater samples from well no. 1. No dissolved lead was detected in the filtered posttreatment water samples.

Because of the presence of lead battery waste on the ground surface in proximity to residences, Tetra Tech recommends additional investigation shown below:

- ✓ • Additional soil samples, both surface and subsurface, should be collected throughout the Pleasant Hills site, using XRF technology for metals analysis, to fully characterize the extent of lead contamination.
- ✓ • Because of the lead concentration discrepancy in groundwater sample PH-GW-1203-01 and its duplicate sample PH-GW-1203-04, well no. 2 should be resampled.
- ✓ • Depending on the data results obtained from additional site characterization, EPA should consider containment or removal of lead contaminated soil exceeding pertinent health-based standards.

REFERENCES

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- U.S. Environmental Protection Agency (EPA). 2002a. "EPA Region III Risk-Based Concentration (RBC) Table." April.
- EPA. 2002b. National Primary Drinking Water Standards, "Maximum Contaminant Level Table."
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- United States Geological Survey (USGS). 1945. 7.5-Minute Service Topographic Map of Auburn, Pennsylvania, Quadrangle.
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<http://www.wunderground.com/history/airport/KRDG/2002/11/22/DailyHistory.html>
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APPENDIX A
FIELD LOGBOOK NOTES
(Four Pages)

APPENDIX B
PHOTOGRAPHIC DOCUMENTATION LOG
(Four Pages)

Photographic Documentation

Client: U.S. Environmental Protection Agency Region 3
Site Name: Pleasant Hills Trailer Park
Location: Tilden Township, Pennsylvania
Date: December 3, 2002

Prepared by: Tetra Tech EM Inc.
Photographer: Brad White
TDD Number: SE3-02-11-002

Photograph No. 1

Photograph Date: November 22, 2002

Orientation: Northwest

Description: Sign near entrance to site



Photograph No. 2

Photograph Date: November 22, 2002

Orientation: North

Description: Southern portion of trailer park



Photographic Documentation

Client: U.S. Environmental Protection Agency Region 3
Site Name: Pleasant Hills Trailer Park
Location: Tilden Township, Pennsylvania
Date: December 3, 2002

Prepared by: Tetra Tech EM Inc.
Photographer: Brad White
TDD Number: SE3-02-11-002

Photograph No. 3

Photograph Date: December 3, 2002

Orientation: Southeast

Description: New development at south side of trailer park



Photograph No. 4

Photograph Date: December 3, 2002

Orientation: Southwest

Description: Well no. 1 and pumphouse



Photographic Documentation

Client: U.S. Environmental Protection Agency Region 3
Site Name: Pleasant Hills Trailer Park
Location: Tilden Township, Pennsylvania
Date: December 3, 2002

Prepared by: Tetra Tech EM Inc.
Photographer: Brad White
TDD Number: SE3-02-11-002

Photograph No. 5

Photograph Date: December 3, 2002

Orientation: Not applicable

Description: Casing fragments located on ground surface on South Street



Photograph No. 6

Photograph Date: December 3, 2002

Orientation: Not applicable

Description: Soil sample PH-SS-1203-01 collected from South Street



Photographic Documentation

Client: U.S. Environmental Protection Agency Region 3
Site Name: Pleasant Hills Trailer Park
Location: Tilden Township, Pennsylvania
Date: December 3, 2002

Prepared by: Tetra Tech EM Inc.
Photographer: Brad White
TDD Number: SE3-02-11-002

Photograph No. 7

Photograph Date: December 3, 2002

Orientation: North

Description: Empty lot with casing fragments



ATTACHMENT A
CHAIN-OF-CUSTODY RECORDS
(Two Pages)

8490

ATTACHMENT B
ANALYTICAL DATA PACKAGES
(30 Pages)